



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

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May 29, 2015

Tom Veratti Jr.  
Con-Test Analytical Laboratory  
39 Spruce Street  
East Longmeadow, MA 01028

**RE: East Longmeadow**  
Transmittal No.: X261623  
Application No.: WE-14-020  
Class: SM79-7  
FMF No.: 178645  
**AIR QUALITY PLAN APPROVAL**

Dear Mr. Tom Veratti Jr.:

The Massachusetts Department of Environmental Protection ("MassDEP"), Bureau of Air and Waste, has reviewed your Non-major Comprehensive Plan Application ("Application") listed above. This Application concerns the proposed operation of an existing organic extraction laboratory, glassware cleaning operation, wet chemistry laboratory and solvent distillation unit at your facility located at 39 Spruce Street in East Longmeadow, Massachusetts ("Facility"). The Application bears the seal and signature of David M. Cotter, Massachusetts Registered Professional Engineer Number 49068.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control" regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-N, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Plan Approval.

## **DESCRIPTION OF FACILITY AND APPLICATION**

Con-Test Analytical Laboratory operates an existing laboratory which consists of a series of analytical laboratories used in the analysis of air, water, soil and solid environmental samples. The facility has submitted a Non-Major Comprehensive Plan Application (NMCPA) #WE-14-020 to construct and operate an existing organic extraction laboratory, glassware cleaning, wet chemistry laboratory and solvent distillation unit. The facility currently has no existing plan approvals.

The facility also operates a metals laboratory, air laboratory, volatile organic analysis laboratory, toxicity characteristic leaching procedure laboratory, petro laboratory, electron capture detector laboratory and a semi-volatile laboratory which do not emit any air contaminants. Therefore, these labs are not subject to the plan approval requirements specified in 310 CMR 7.02.

### **Organic Extraction Laboratory**

The existing organic extraction laboratory performs extractions on water, soil and solid material samples using extraction methods developed by the USEPA and state agencies. The extraction methods include microwave extraction for soils, liquid-liquid extraction for water, Soxhlet extraction for PCB analysis and herbicide extraction. The solvents used in the extraction methods consist of a single solvent, such as methylene chloride (DCM), or a combination of solvents including acetone, ethyl ether and hexane. The only extraction method that has emissions to the atmosphere is the liquid-liquid extraction which uses EPA Method 3510C. The facility has estimated that a maximum of 12 pounds per year of DCM will be emitted from the venting of samples during the extraction for liquid analyses.

Once a sample has been extracted, the resultant volume is transferred to glass tubes and concentrated to a final volume of 1- 10 milliliters in one of eight Buchi Syncore (12 Rack) – condenser units. Six Buchi Syncore units are currently operating at the facility and two additional units may be added in the future. The Buchi Syncore unit has 100% capture based on EPA Method 204 – 40 CFR Part 51 Appendix M and a removal efficiency of 95%. Each Buchi Syncore unit holds 12 samples which are placed under a vacuum while the samples are processed through a heating and cooling cycle. The samples are heated so that a portion of the solvent evaporates and is transferred by vacuum at 100% capture to a distillation chamber. Using a Buchi Model# F-108 refrigerated recirculating chiller, the vapor is cooled until it becomes liquid again and is collected in an enclosed waste drum. The temperature of the coolant (water) is continuously monitored and digitally displayed by the V-850/855 vacuum controller. The V-850/855 vacuum controller is equipped with visual and audible alarms in the event that the water temperature is outside of the proper operating range.

The facility has stated that the Buchi Syncore units are technically infeasible for concentrating some extraction methods to a final volume of 1 milliliter. When this occurs the samples are initially concentrated in the Buchi Syncore units to within 0.1 –1.0 milliliters of the final volume. Then the sample is transferred to a turbovap, or similar device, where the solvent is evaporated, uncontrolled, until the desired final volume is achieved. The turbovap unit operates by placing

the sample in a hot water bath and uses nitrogen to increase the evaporation rate of the solvent. An average of 1.0 milliliters of solvent (containing volatile organic compounds (VOCs), hazardous air pollutants (HAPs), acetone, or a mixture of these) per sample is evaporated, uncontrolled, to the ambient air through a fume hood. The facility has indicated that a maximum of 12.5% of the samples concentrated in the Buchi unit per year will require this additional procedure.

Air contaminant emissions from the concentration process in the Buchi Syncore units, as referenced in Table B-3 of the plan approval application, will consist of no more than 0.93 tons per year of DCM, 1.37 tons per year of total HAPs (DCM and hexane), 0.29 tons per year of acetone and 0.52 tons per year of VOCs (ethyl ether and hexane). These emissions were conservatively based on a maximum solvent loss (from Table B-2 of the plan approval application) of 12,737 liters per year of DCM, 2,018 liters per year of ethyl ether, 6,759 liters per year of acetone, 12,025 liters per year of hexane with a capture efficiency of 100% and a minimum removal efficiency of 95%. Only four of the eight Buchi Syncore units will use methylene chloride.

Additional air contaminant emissions from the use of an uncontrolled turbovap unit will consist of no more than 0.02 tons per year of DCM, 0.04 tons per year of total HAPs (DCM and hexane), 0.03 tons per year of acetone and 0.02 tons per year of VOCs (ethyl ether and hexane), as referenced in Table B-3 of the plan approval application. These emissions were conservatively based on a maximum of 1.0 milliliters of solvent (containing VOCs, HAPs, acetone, or a mixture of these) per sample emitted to atmosphere for a maximum of 35,965 samples per year (12.5% of the 287,718 samples per year).

### **Glassware Cleaning Operation**

The existing glassware cleaning operations at the facility include the manual washing or rinsing of glassware used in the extraction/concentration process within laboratory hoods. The cleaning is done within a laboratory hood and involves washing the glassware after a sample is analyzed, pre-washing the glassware before it is used for another sample, syringe cleaning and other various uses. The cleaning solvent, such as DCM, ethyl ether, acetone or hexane, is applied to a cleaning brush or squirted into the glassware. The glassware is brushed until all signs of contamination are removed. The remaining solvent is collected in a container and then transferred to a hazardous waste container. There are no pollution control devices proposed for this operation.

Air contaminant emissions from glassware cleaning will consist of no more than 3.71 tons per year of DCM, 6.39 tons per year of total HAPs (DCM and hexane), 4.07 tons per year of acetone and 2.80 tons per year of VOCs (ethyl ether and hexane). These emissions were based on an average of 30% of the solvent being evaporated to atmosphere which will be 2,530 liters per year of DCM, 3,683 liters per year of hexane, 4,679 liters per year of acetone and 147 liters per year of ethyl ether.

### **Wet Chemistry Laboratory**

The existing wet chemistry laboratory mainly performs extractions for liquid oil and grease samples. Other chemical tests performed in this lab consist of pH, alkalinity, biochemical oxygen demand, cyanide, nitrate/nitrite, phosphorous, reactivity and total organic carbon. Only the extractions for liquid oil and grease samples have VOC and HAP emissions. The oil and grease extractions are done using EPA analysis Method 1664, Revision B with the alternate solid-phase extraction technique which uses hexane and methanol. No DCM is used for this analysis. The hexane and methanol are used to condition the solid-phase extraction disk. The conditioned solvents are collected in a flask and disposed of as hazardous waste so there are no air contaminant emissions. In the extraction portion of the analysis, hexane is used to elute the analyte and is collected in a flask. The flask is then heated to evaporate the hexane from the sample. There are no pollution control devices proposed for this operation.

Air contaminant emissions from the wet chemistry lab will consist of 0.36 tons per year of hexane which is a VOC and a HAP. This emission rate was based on conducting an EPA Method 1664 Revision B analysis on a maximum of 16,425 samples per year and no more than 30 milliliters of hexane per sample being evaporated to atmosphere.

### **Solvent Distillation Unit**

The facility currently operates a distillation process to recover methylene chloride, hexane and acetone which is used throughout the facility. Most of the solvent for recovery comes from the solvent collected in the concentration step of the organic extraction lab. The distillation unit is a closed system, except for the opening in the receiving container through which the condensing coil is inserted. The distillation process begins by pressurizing a container of solvent or mixed solvents. The pressurized container is then connected to a 45 liter distillation flask via a pressure line and a pressure relief valve. The valve controls the transfer of the collected solvent to the flask. Once the flask is full (~12 gallons) the valve is closed and the flask is heated to a series of preset temperature levels based on the solvents to be distilled. The evaporated solvent is then drawn through a series of condensing coils to transfer it back to a liquid. The condensing coils are connected with drain lines that are inserted into a stainless steel receiving container which collects the recovered solvents. The receiving container is 20 to 55 gallons and is sealed after the distillation is complete. The entire distillation process has a solvent recovery rate of 2 to 4 liters per hour and takes between 12 and 20 hours to complete depending on the mix of solvents to be distilled and the temperature levels required.

Air contaminant emissions from the distillation process will consist of 0.04 tons per year of DCM, 0.01 tons per year of hexane and 0.01 tons per year of acetone. The emission rates were based on the displacement of solvent laden air from the head space of a 55 gallon drum receiving container, a maximum distillation rate of 4 liters per hour and 8760 hours per year of operation.

### **Best Available Control Technology Analysis**

The organic extraction laboratory, glassware cleaning operation, wet chemistry laboratory and solvent distillation unit are subject to and must satisfy the best available control technology (BACT) requirements of 310 CMR 7.02(8)(a)2.

### **Organic Extraction Laboratory**

The Permittee has proposed that the organic extraction laboratory will comply with the BACT requirements contained in 310 CMR 7.02(8)(a)2.a. by using 6 existing Buchi Syncore Units (capable of holding a maximum of 12 samples each) w/ refrigerated recirculating chillers and 2 additional Buchi Syncore units w/ refrigerated recirculating chillers, or equivalent as determined by MassDEP, which have yet to be installed. Each Buchi Syncore unit will achieve 100% capture and a minimum removal efficiency of 95% for VOCs, HAPs and acetone. At this time, MassDEP considers 100% capture and 95% removal efficiency to be representative of BACT for this type of source based on the recent MassDEP Plan Approval's SE-13-032 and CE-13-022 which were both issued June 10, 2014. The maximum amount of solvent to be evaporated and controlled by the Buchi Syncore Units will be 12,737 liters per year of DCM, 2,018 liters per year of ethyl ether, 6,759 liters per year of acetone and 12,025 liters per year of hexane.

One exception to the BACT is that there will be some uncontrolled VOC, HAP and acetone emissions since the Buchi Syncore Units are technically infeasible for concentrating some extraction methods to the required final volume of 1 milliliter. The maximum amount of VOCs, HAPs and acetone to be evaporated in an uncontrolled unit, such as a turbovap, will be no more than 16.55 liters per year of DCM, 0.72 liters per year of ethyl ether, 29.47 liters per year of acetone and 23.94 liters per year of hexane.

The abovementioned restrictions for the organic extraction laboratory will result in a combined (including emissions from extraction, controlled concentration and uncontrolled concentration process) maximum total emission rate of 0.96 tons per year of DCM, 1.41 tons per year of total HAPs (DCM and hexane), 0.32 tons per year of acetone and 0.53 tons per year of VOCs (ethyl ether and hexane).

In addition, only four of the eight Buchi Syncore Units will be used for concentrating samples which contain DCM due to the results of the air quality dispersion modeling report. Each unit will be clearly labeled to identify whether or not it may be operated with samples containing DCM. The four units designated as being able to use DCM may only be exhausted to Stack ID 2 and 4 as demonstrated in the air quality dispersion modeling report.

The facility will also implement pollution prevention and best management practices concerning the storage, conveying and handling of VOCs, HAPs and acetone for the purposes of minimizing evaporation losses to the atmosphere.

### **Glassware Cleaning Operations**

To satisfy the BACT requirements for the glassware cleaning operation, the Permittee has proposed a combination of best management practices, pollution prevention and a limitation on raw material usage, in accordance with 310 CMR 7.02(8)(a)2.b., which is in lieu of an emission-unit-specific top-down BACT analysis. Based on the information contained in the application and supplemental submittals, BACT will consist of a limit on the amount of VOCs, HAPs and acetone being evaporated to atmosphere which will be no more than 2,530 liters per year of

DCM, 3,683 liters per year of hexane, 4,679 liters per year of acetone and 147 liters per year of ethyl ether. These restrictions will result in a maximum emission rate of 3.71 tons per year of DCM, 6.39 tons per year of total HAPs (DCM and hexane), 4.07 tons per year of acetone and 2.80 tons per year of VOCs (ethyl ether and hexane) from the glassware cleaning operation.

In addition, the Permittee has implemented several pollution prevention and best management practices to reduce fugitive emissions. These practices will include:

- Using washing techniques which do not require the use of VOC, HAP and acetone-containing materials when possible, such as soap solutions and oven baking.
- Using fine tip squirt bottles when applying VOC, HAP and acetone-containing materials to the glassware to control the amount of material used.
- Storing all VOC, HAP and acetone-containing materials in closed containers.
- Keeping all containers of VOC, HAP and acetone-containing materials closed at all times except when materials are being deposited or removed from the container.
- Using Eco Funnels on receiving vessels for VOC, HAP and acetone-containing materials.

### **Wet Chemistry Laboratory**

To satisfy the BACT requirements, the Permittee has proposed a combination of best management practices, pollution prevention and a limitation on raw material usage, in accordance with 310 CMR 7.02(8)(a)2.b., which is in lieu of an emission-unit-specific top-down BACT analysis. Based on the information contained in the application and supplemental submittals, BACT will consist of a limit on the number of samples that can be processed and on the amount of VOCs and HAPs that will be evaporated to atmosphere in the lab which will be a maximum of 16,425 samples per year and no more than 30 milliliters of hexane per sample being evaporated to atmosphere. These restrictions will result in a maximum emission rate of 0.36 tons per year of VOCs and HAPs

The facility will also implement pollution prevention and best management practices concerning the storage, conveying and handling of VOCs and HAPs for the purposes of minimizing evaporation losses to the atmosphere.

### **Solvent Distillation Unit**

BACT for the solvent distillation unit will be a maximum distillation rate of 4 liters per hour and a maximum emission rate of 0.04 tons per year of DCM, 0.01 tons per year of hexane and 0.01 tons per year of acetone.

The facility will also implement pollution prevention and best management practices concerning the storage, conveying and handling of VOCs and HAPs for the purposes of minimizing evaporation losses to the atmosphere.

### **Regulatory Applicability**

In addition to the organic extraction laboratory, glassware cleaning operation, wet chemistry laboratory and solvent distillation unit being subject to the BACT requirements of 310 CMR 7.02(8)(a)2, the facility is subject to the visible emission requirements of 310 CMR 7.06, the dust, odor, construction and demolition requirements of 310 CMR 7.09 and the noise reduction requirements of 310 CMR 7.10. There are no New Source Performance Standards (40 CFR Part 60) or National Emission Standards for Hazardous Air Pollutants (40 CFR Part 63) which apply to this source.

### **Ambient Air Quality Impact Analysis**

MassDEP has reviewed the air quality dispersion modeling report that was included as part of Application WE-14-020. The AERMOD air quality dispersion modeling report demonstrates that the organic extraction laboratory and glassware cleaning, when operated in accordance with this Plan Approval, will not cause an exceedance of the current annual Allowable Ambient Limit (AAL) and the 24-hour Threshold Effects Exposure Limit (TEL) guideline values for methylene chloride.

### **Type of Model**

The air quality modeling analysis was performed with the latest version (14134) of the USEPA AERMOD with USEPA's recommended regulatory default options and rural dispersion coefficients. AERMOD was set up to predict 24-hour and annual average concentrations of methylene chloride in units of  $\mu\text{g}/\text{m}^3$ .

### **Meteorological Data**

The air quality modeling analysis used five years (2008-2012) of hourly surface observations and one-minute wind speed and direction data from Westfield Barnes Regional Airport, MA along with 5 years of concurrent upper air meteorological data from Albany International Airport, NY. This data was considered to be the most representative for the facility's dispersion environment. One-minute automated surface observing stations (ASOS) data was utilized with AERMINUTE version 11325 to reduce the number of calm wind hours. AERSURFACE version 13016 was used to determine the surface characteristics and roughness length of the area in twelve 30-degree wind sectors out to 1 kilometer. AERSURFACE was also used to determine Bowen ratio and albedo based on average land use surface characteristics over a 10 by 10 km square centered on the meteorological data collection site in accordance with USEPA's AERSURFACE User's Guide (revised January 2013).

### **Selected Air Quality Monitors**

Background air quality concentrations of methylene chloride were not added to model-predicted concentrations because no methylene chloride monitoring data was available to use in the analysis. This is an acceptable practice for this type of air toxic modeling analysis.

### Receptor Network

A nested Cartesian coordinate (i.e., rectangular) receptor grid was used with receptor spacing of 50 meters out to 1.5 km, 100 meters out to 3 km, and 500 meters out to 5 km. The spacing and horizontal extent of this receptor array was more than adequate for this modeling analysis. Property line receptors spaced at 25 meters were used.

### Air Dispersion Modeling Results

Table 5 of the modeling report shows that the methylene chloride modeling results comply with the applicable MassDEP TEL/AALs. The methylene chloride modeling results represent the combined impact from all six stacks (Stack ID 2,3,4,5,6,7) for the organic extraction laboratory (only four of the eight Buchi Syncore Units use methylene chloride) and glassware cleaning. The modeling results are provided in the table below.

Averaging Period	Facility Impact	TEL/AAL Guideline	Percent of TEL/AAL
24-hour (TEL)	82.93 ug/m <sup>3</sup>	100.0 ug/m <sup>3</sup>	83%
Annual (AAL)	26.21 ug/m <sup>3</sup>	60.0 ug/m <sup>3</sup>	44%

Therefore, the facility will neither cause nor contribute to a condition of air pollution with respect to methylene chloride emissions.



## 1. EMISSION UNIT IDENTIFICATION

Each Emission Unit (“EU”) identified in Table 1 is subject to and regulated by this Plan Approval:

<b>Table 1</b>			
<b>EU</b>	<b>Description</b>	<b>Design Capacity</b>	<b>Pollution Control Device (PCD)</b>
1	Organic Extraction Laboratory	NA	6 –Buchi Syncore Condenser Units (12 samples per unit) w/ Buchi Model# F-108 refrigerated recirculating water chiller (These 6 units were installed prior to the plan approval issuance date)  2–Buchi Syncore Condenser Units (12 samples per unit) w/ Buchi Model# F-108 refrigerated recirculating water chiller, or equivalent as determined by MassDEP. (These 2 units were not installed at the time of plan approval issuance)
2	Glassware Cleaning	NA	NA
3	Wet Chemistry Lab	NA	NA
4	Solvent Distillation Unit : <ul style="list-style-type: none"> <li>• 45 Liter Distillation Flask</li> <li>• Pressure Relief Valve</li> <li>• Condensing Coils</li> <li>• Receiving Containers- Maximum 55 gallon</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum Distillation Rate = 4 liters per hour</li> </ul>	NA

### Table 1 Key:

EU = Emission Unit Number

PCD = Pollution Control Device

## 2. APPLICABLE REQUIREMENTS

### A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2:

Table 2a			
EU	Operational / Production Limit	Air Contaminant	Emission Limit
1	1. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the total amount of VOCs, HAPs and acetone being controlled by the Buchi Syncore Condenser Units shall not exceed: <ul style="list-style-type: none"> <li>• 12,737 liters of DCM in any 12 consecutive month period</li> <li>• 2,547 liters of DCM in any calendar month</li> <li>• 2,018 liters of ethyl ether in any 12 consecutive month period</li> <li>• 404 liters of ethyl ether in any calendar month</li> <li>• 6,759 liters of acetone in any 12 consecutive month period</li> <li>• 1,352 liters of acetone in any calendar month</li> <li>• 12,025 liters of hexane in any 12 consecutive month period</li> <li>• 2,405 liters of hexane in any calendar month</li> </ul>	VOC	0.53 TPY and 0.11TPM
	2. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, each Buchi Syncore Condenser Unit shall have a capture efficiency of no less than 100%.	HAP (Single)	0.96 TPY and 0.19 TPM
	3. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, each Buchi Syncore Condenser Unit shall have a minimum overall control efficiency of 95% for VOCs, HAPs and acetone.		
	4. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, no more than a total of 16.55 liters of DCM, 0.72 liters of ethyl ether, 29.47 liters of acetone and 23.94 liters of hexane shall be used <sup>1</sup> in an uncontrolled concentration unit, such as a turbovap (or equivalent), in any 12 consecutive month period.	HAP (Total)	1.41 TPY and 0.28 TPM
	5. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, all samples shall be concentrated while being controlled by a Buchi Syncore Condenser Unit, except that a sample may be concentrated in an uncontrolled unit, such as a turbovap, after being initially concentrated by one of the Buchi Syncore Condenser Units.		
	6. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, only 4 of the 8 Buchi Syncore Condenser Units shall be used for concentrating samples which contain methylene chloride.	acetone	0.32 TPY and 0.06 TPM
	7. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the recirculating water temperature in the Buchi Model# F-108 chiller shall be maintained between -10°C and 25°C during operation.		

Table 2b			
EU	Operational / Production Limit	Air Contaminant	Emission Limit
2	8. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the amount of VOCs, HAPs and acetone being used <sup>1</sup> in EU 2 shall not exceed: <ul style="list-style-type: none"> <li>2,530 liters of DCM in any 12 consecutive month period</li> <li>3,683 liters of hexane in any 12 consecutive month period</li> <li>4,679 liters of acetone in any 12 consecutive month period</li> <li>147 liters of ethyl ether in any 12 consecutive month period</li> </ul>	VOC	2.80 TPY and 0.56 TPM
		HAP (Single)	3.71 TPY and 0.74 TPM
		HAP (Total)	6.39 TPY and 1.28 TPM
		acetone	4.07 TPY and 0.81 TPM
3	9. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, no more than 16,425 samples shall be processed in any 12 consecutive month period.  10. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, no more than 30 milliliters of hexane per sample shall be used <sup>1</sup> in EU 3.	VOC	0.36 TPY
		HAP (Single)	0.36 TPY
		HAP (Total)	0.36 TPY
4	11. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the distillation rate shall not exceed 4 liters of solvent per hour.	VOC	0.01 TPY
		HAP (Single)	0.04 TPY
		HAP (Total)	0.05 TPY
		acetone	0.01 TPY

**Table 2 Key:**

EU = Emission Unit Number

VOC = Volatile Organic Compounds

HAP (single) = maximum single Hazardous Air Pollutant

HAP (total) = total Hazardous Air Pollutants.

TPM = tons per month

TPY = tons per consecutive 12-month period

DCM = methylene chloride

CMR = Code of Massachusetts Regulations

≤ = less than or equal to

**Table 2 Notes**

- The amount of VOC, HAP and acetone used means the amount of that particular material that is evaporated to atmosphere. Any material recovered from the applicable EU in liquid form need not be counted toward the usage limitation provided 1) the amount and identity of the recovered material is recorded and 2) it is 100% DCM, 100% hexane, 100% ethyl ether or 100% acetone.

**B. COMPLIANCE DEMONSTRATION**

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5:

<b>Table 3</b>	
<b>EU</b>	<b>Monitoring and Testing Requirements</b>
1	1. The vacuum controller associated with each Buchi Syncore Condenser Unit w/ Buchi Model #F-108 refrigerated recirculating chiller shall be equipped with instrumentation which is capable of continuously monitoring the water temperature during operation.
	2. The vacuum controller associated with each Buchi Syncore Condenser Unit w/ Buchi Model #F-108 refrigerated recirculating chiller shall be equipped with visible and audible alarms for the water temperature.
	3. The visible and audible alarms on the vacuum controller associated with each Buchi Syncore Condenser Unit w/ Buchi Model #F-108 refrigerated recirculating chiller shall be activated when the water temperature are outside of the operating ranges specified in Table 2 herein.
	4. During operation of each Buchi Syncore Condenser Unit w/ Buchi Model# F-108 refrigerated recirculating chiller, the recirculating water flow and condensing of vapors shall be visually monitored, at a minimum, at the beginning of each concentration process and in the middle of each concentration process. If no water flow or condensing of vapors are observed during operation of the concentration process, the concentration process shall be stopped.
	5. The Permittee shall perform monthly testing on each Buchi Syncore Condenser Unit while it is in operation to determine the overall control efficiency. The Permittee shall test each Buchi Syncore Condenser Unit according to the approved test protocol. The initial test shall occur within 30 days of submitting an approved test protocol or after installation of a unit, whichever is the later. Then no later than the 15 <sup>th</sup> of each month thereafter. After one year from the date of issuance of this plan approval, the Permittee may submit a written request to MassDEP to propose a reduction in the test frequency. The written request shall include a new proposed test frequency with supporting justification which shall include the overall control efficiency test results from the previous 12 consecutive month period.
Facility-wide	6. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration
	7. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and Regulation 310 CMR 7.13

**Table 3 Key:**

EU = Emission Unit Number  
CMR = Code of Massachusetts Regulations  
MassDEP = Massachusetts Department of  
Environmental Protection

<b>Table 4</b>	
<b>EU</b>	<b>Recordkeeping Requirements</b>
1	1. The Permittee shall maintain comprehensive and accurate records of the testing as required by Table 3 herein. The record shall include the date the test was performed and the overall control efficiency for each unit.
	2. The Permittee shall maintain comprehensive and accurate records of the recirculating water temperature at the beginning and end of each concentration process. The temperature-records shall also include the date and time associated with each record.
Facility-wide	3. The Permittee shall maintain adequate records on-site to demonstrate compliance status with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve-month period (current month plus prior eleven months). These records shall be compiled no later than the 15 <sup>th</sup> day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at <a href="http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping">http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping</a> .
	4. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	5. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EU(s) and PCD(s) approved herein on-site.
	6. The Permittee shall maintain a record of routine maintenance activities performed on the approved EU(s), PCD(s) and monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	7. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s), PCD(s) and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	8. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	9. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	10. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

**Table 4 Key:**

EU = Emission Unit Number

CMR = Code of Massachusetts Regulations

PCD = Pollution Control Device

SOMP = Standard Operating and Maintenance Procedure

USEPA = United States Environmental Protection Agency

<b>Table 5</b>	
<b>EU</b>	<b>Reporting Requirements</b>
1	1. Within 30 days from the date of issuance of this plan approval, the Permittee shall submit to MassDEP a proposed test protocol for approval by MassDEP. The test protocol shall be designed to determine the compliance status with the overall control efficiency requirements in Table 2a herein. The test protocol must be sufficiently detailed such that the overall control efficiency test is reproducible each time the test is performed by any operator.
	2. The Permittee shall notify MassDEP, in writing, the date on which the remaining two Buchi Syncore Condenser Units w/ Buchi Model# F-108 refrigerated recirculating water chiller, or equivalent as determined by MassDEP, commence operation at the facility. If the installed control device is not the Buchi Syncore Condenser Unit w/ Buchi Model# F-108 refrigerated recirculating water chiller, the notice shall contain the make and model # of the installed control device with supporting documentation explaining how the control device is equivalent to the control device that was approved by MassDEP. This notice shall be provided to MassDEP within (5) days of commencing operation.
	3. The Permittee shall submit to MassDEP the results of the initial overall control testing performed on each Buchi Syncore Condenser Unit within 30 calendar days after completing the testing.
Facility-wide	4. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a "Responsible Official" as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	5. The Permittee shall notify the Western Regional Office of MassDEP, BAW Compliance& Enforcement Chief by telephone: 413-755-2131, email: saadi.motamedi@state.ma.us, or fax 413-784-1149, as soon as possible, but no later than three (3) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to Compliance& Enforcement Chief at MassDEP within ten (10) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	6. The Permittee shall report every three years to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.
	7. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP's request.

**Table 5 Key:**

EU = Emission Unit Number

MassDEP = Massachusetts Department of Environmental Protection

CMR = Code of Massachusetts Regulations

BAW = Bureau of Air and Waste

#### 4. **SPECIAL TERMS AND CONDITIONS**

- A. The Permittee is subject to, and shall comply with, the Special Terms and Conditions as contained in Table 6 below:

<b>Table 6a</b>	
<b>EU</b>	<b>Special Terms and Conditions</b>
1	<ol style="list-style-type: none"> <li>1. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, EU 1 shall be equipped with the pollution control devices specified in Table 1 herein.</li> <li>2. The Permittee shall operate and maintain the six existing (installed prior to plan approval issuance date) Buchi Syncore Condenser Units (12 samples per unit) w/ Buchi Model# F-108 refrigerated recirculating water chiller according to the manufacturer's instructions.</li> <li>3. Once the two additional Buchi Syncore Condenser Units (12 samples per unit) w/ Buchi Model# F-108 refrigerated recirculating water chiller, or equivalent as determined by MassDEP, have been installed, the Permittee shall operate and maintain the units according to the manufacturer's instructions.</li> <li>4. Any Buchi Syncore Condenser Unit which is tested according to the test protocol and does not comply with the overall control efficiency limits contained in Table 2 herein shall not be commercially operated until the equipment is retested and demonstrates compliance with the overall control efficiency limits contained in Table 2 herein.</li> <li>5. The Permittee shall clearly identify which Buchi Syncore Condenser Units shall be operated and not operated during the concentrating of samples containing methylene chloride. The identification shall consist of a legible label attached to each unit which clearly states whether or not that specific unit may be operated during the concentration of samples containing methylene chloride.</li> </ol>
2	<ol style="list-style-type: none"> <li>6. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, during the cleaning of glassware, the Permittee shall comply with the following work practices: <ol style="list-style-type: none"> <li>a. Use washing techniques which do not require the use of VOC, HAP and/or acetone- containing materials when possible, such as soap solutions and oven baking;</li> <li>b. Perform cleaning without atomizing the VOC, HAP and/or acetone- containing materials;</li> <li>c. Ensure that all spent cleaning material is captured in closed containers;</li> <li>d. Use fine tip squirt bottles when applying VOC, HAP and/or acetone-containing materials to the glassware; and,</li> <li>e. Use Eco Funnels, or other type of device which minimizes evaporative losses, on receiving vessels for VOC, HAP and/or acetone-containing materials.</li> </ol> </li> </ol>
4	<ol style="list-style-type: none"> <li>7. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, EU 4 shall be a closed system, except for the opening in the receiving container through which the condensing coil is inserted. The opening in the receiving container shall be minimized to prevent evaporative losses.</li> </ol>

Table 6b	
EU	Special Terms and Conditions
Facility-wide	<p>8. Pursuant to the best available control technology provision of 310 CMR 7.02(8)(a)2, the Permittee shall comply with the following work practices:</p> <ul style="list-style-type: none"> <li>a. store all VOC, HAP and/or acetone-containing materials in closed containers;</li> <li>b. ensure that mixing and storage containers used for VOC, HAP and/or acetone-containing materials are kept closed at all times except when depositing or removing these materials;</li> <li>c. minimize spills of VOC, HAP and/or acetone-containing materials;</li> <li>d. convey VOC, HAP and/or acetone-containing materials from one location to another in closed containers or pipes;</li> <li>e. store and dispose of all absorbent materials, such as cloth or paper, that are contaminated with VOC, HAP and/or acetone-containing materials in non-absorbent containers that shall be kept closed except when placing materials in or removing materials from the container.</li> </ul>

**Table 6 Key:**

EU = Emission Unit Number

VOC = Volatile Organic Compounds

HAP = Hazardous Air Pollutant

- B. The Permittee shall install and use an exhaust stack, as required in Table 7, on each of the Emission Units that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including, but not limited to, rain protection devices known as “shanty caps” and “egg beaters.”
- C. The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7, for the Emission Units that are regulated by this Plan Approval:



<b>Table 7</b>				
<b>EU</b>	<b>Stack Height Above Ground (feet)</b>	<b>Stack Inside Exit Dimensions (feet)</b>	<b>Stack Gas Exit Velocity Range (feet per second)</b>	<b>Stack Gas Exit Temperature Range (°F)</b>
1, 2 (Stack ID 2)	38	0.5	67.91	70
1, 2 (Stack ID 4)	38	0.58	56.14	70
1 (Stack ID 8) <sup>1</sup>	34.8	0.92	10.10	70
2 (Stack ID 3)	38	0.67	52.53	70
2 (Stack ID 5)	38	0.50	67.91	70
2 (Stack ID 6)	38	0.58	62.37	70
2 (Stack ID 7)	38	0.67	57.28	70
3 (Stack ID 11)	34.25	1.0	10.60	70

**Table 7 Key:**

EU = Emission Unit Number

°F = Degree Fahrenheit

**Table 7 Notes**

1. Stack ID 8 cannot be used for exhausting methylene chloride from EU #1.

## **5. GENERAL CONDITIONS**

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.

- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

## **6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT**

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain “Fail-Safe Provisions,” which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

## **7. APPEAL PROCESS**

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Cortney Danneker by telephone at 413-755-2234, or in writing at the letterhead address.

This final document copy is being provided to you electronically by the  
Department of Environmental Protection. A signed copy of this document  
is on file at the DEP office listed on the letterhead.

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Marc Simpson  
Air Quality Permit Chief  
Bureau of Air and Waste

ecc: MassDEP/Boston - Yi Tian  
MassDEP/WERO – Peter Czapienski  
David M. Cotter, P.E. – TRC Environmental Corporation